

IV.—*Some Mediterranean Bryozoa.*
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[Plate XII.]

IN my collection there are many specimens which I have intended to describe or revise, but the description of various large collections has prevented, and I am glad now to make a beginning by dealing with five interesting forms—from Naples and Oran:—

Pedicellina hirsuta, Jullien.
Lepralia bifurcata, sp. n.
Lepralia circumcincta, Neviani.
Lepralia oranensis, sp. n.
Lagenipora ignota, Norman.

Pedicellina hirsuta, Jullien. (Pl. XII. figs. 1, 5.)

Pedicellina hirsuta, Jullien, 'Bryozoaires, Mission du Cap Horn,' p. 13, 1888.

The small specimen from Naples seems to correspond with Jullien's description, and has large recurved spines all over the zoecium, curved and pointed at the base, and their form suggests that they were movable. The peduncle is large and is also covered with spines, while the stolon is much narrower than the peduncle.

In my specimen I am not able to see clearly the base of the peduncle or the adjoining stolon, but believe it is correctly drawn. The contraction near the base has no appearance of being accidental, though more complete material is desirable.

This specimen was referred to in my description of the Red Sea Bryozoa*. It will be noticed that the zoecium and peduncle are very exceptionally large (calyx about 0.38 mm., peduncle about 0.11 mm.).

Loc. Ile Hoste, Orange Bay, 26 met.; Naples.

Lepralia bifurcata, sp. n. (Pl. XII. figs. 2, 3, 4.)

In specimens from Capri the zoaria have two branches bifurcating at a very wide angle (fig. 2 a).

Round the zoarium there are but few zoecia, from four to eight, either surrounding an imaginary axis or slightly flattened. The zoecia are irregularly quadrate, granular,

* Journ. Linn. Soc., Zool. vol. xxxi. p. 252 (1910).

having the oral aperture contracted at the side, with the part below the contraction narrower than the part above. At each side of the oral aperture there is a small, raised, rounded avicularium, and any of these may be replaced by a large spathulate one, in one case both avicularia being thus replaced. Usually the spathulate avicularia are directed distally, but one is diagonal, or it may be directed proximally. The bar to the avicularium has a small central denticle.

The granular ovicell is globular, widely open, so that the operculum cannot close the ovicell aperture. At the bifurcation there is a large round opening with a raised border (fig. 3), the object of the opening is not clear. It might have been for a large avicularium, or for a radicle, but the position does not make this probable.

It is much like the fossil *Characodoma halli*, Maplestone*, from Mornington and Mitchell River, Victoria, Australia, which, however, has the quadrate zoarium articulated, and the ovicelligerous zoecia are surrounded by irregular nodules; however, the shape of the zoecia is the same with the ovicell in the same position, but in *C. halli* there are small triangular or spathulate avicularia replacing the semicircular or spathulate ones of *L. bifurcata*.

Loc. Capri, 50 fathoms.

Lepralia circumcincta, Neviani. (Pl. XII. figs. 6-10.)

Hippoporina circumcincta, Neviani, "Bri. neoz. di alcune Loc. d'Italia," pt. 3, Bull. Soc. Rom. per gli Stud. Zool. vol. v. p. 118, fig. 7 (1896); Bri. postpl. di Spilinga, p. 28, fig. 11 (1896); "Bri. neog. delle Calabrie," Pal. Ital. vol. vi. p. 187 (73), pl. xvii. figs. 10, 11 (1900).

Lepralia grimaldi, Jull. et Calvet, Bry. de l'Hirondelle, p. 70, pl. ix. fig. 5 (1903).

Cheilopora circumcincta, Levinsen, Morph. & Syst. Stud. p. 353 (1909).

This does not appear to be uncommon at Naples, and Kirchenpauer left a manuscript description in the Zoological Station, calling it *Lepralia dohrni*. When the manuscript was shown to me, it was my intention to describe and figure the species, using the name given by Kirchenpauer, and I have sent away some specimens explaining that Kirchenpauer had given it this manuscript name.

When my paper on the Naples Bryozoa was written it had

* "Further Desc. of Tertiary Polyzoa of Victoria," Proc. Roy. Soc. Vict. vol. xiii. n. s., p. 7, pl. ii. fig. 17 (1900).

not come before me, nor had the specimens first met with any ovicells, but they occur from Oran and from Capri. Neviani evidently had very small pieces fossil, and did not describe any ovicell. He speaks of it as incrusting, though with fragments it might be difficult to be certain of this; from Naples and Capri it is unilaminate, whereas from Oran all except one piece are bilaminate, back to back. Jullien and Calvet, in describing *L. grimaldi*, do not say whether it is uni- or bilaminate.

Neviani described the surface as rugose, Jullien and Calvet say with small perforations, and both are correct as regards Capri and Oran specimens, which are covered by large granules and in between there are small pores. The nature of the granules varies in different parts and in some conditions they are the most noticeable, while in others the pores are the most distinct, but none could be described as smooth. The piece figured is very regular, but this is not always the case.

There is a small triangular avicularium at one or both of the upper corners of the zoecium.

There are about 27 tentacles in the Naples specimens.

There are usually 4 distal multiporous rosette-plates near to the basal wall and 4-6 lateral ones.

The ovicell is coarsely granular, but the granules are not so large as those figured by Jullien and Calvet. It is not raised, but shows beyond the oral aperture buried in the distal zoecium. The ovicelligerous zoecia have a much wider oral aperture than the ordinary zoecia, with the proximal edge straight, while the distal border forms the curve of a wide arc (see fig. 8). The ovicell has much the same shape as that of *Plustra foliacea*, L., passing to the basal wall, the wall between the distal end of the zoecium and the ovicell does not appear to be calcareous.

It is very difficult to know in which genus this should be placed. Neviani* made the genus *Hippoporina* for all species indicated by modern authors as *Lepralia*—that is to say, all that have a horseshoe-shaped oral aperture; he then mentions *H. pertusa*, Esper, which should therefore be the type of *Hippoporina*. In Part II. of the same paper, also 1895, he mentions *H. foliacea*, Ell. & Sol., and then *H. integra*, sp. n., which he figures. Canu calls this the type, but it is not the first mentioned. In Part III., 1896, Neviani mentions *H. imbellis*, Busk, and *H. adpressa*, Busk; then, further

* "Bri. neoz. di alcune Località d'Italia," 1895, p. 109, and Waters, "Bry. from Zanzibar," Proc. Zool. Soc. 1913, p. 515.

on in the same paper, he describes and figures *H. circumcincta*, nov., and *H. spilingæ*, nov. At one time, through an error in binding, I was misled into thinking *H. circumcincta* was the first mentioned and therefore the type of *Hippoporina*. Neviani also includes *H. edax*, Busk; *H. tessulata*, Rss.; *H. depressa*, B.; *H. complanata*, Norm.; *H. foliacea*, E. & S.; *H. pallusiana*, Moll. Neviani also described the genus as new in "Bri. foss. della Farnesina," Pal. Ital. vol. i. p. 107 (1895), where he mentions first *H. foliacea*, E. & S.—that is to say, in 1895 he described it as new in two places, in one mentioning first *foliacea*, in the other *H. pertusa*. Which of the papers was first published is not indicated, though in Neviani's 'Publicazione Diverse' the "Bri. neoz." comes first.

Canu*, in his "Bryozoaires des Terrains Tertiaires," includes under *Hippoporina* several fossil species, describing or mentioning the ovicells in all but two, but unfortunately his photographs only show them in three cases. *H. angustoma*, Rss., is included, but with its small roundish oral aperture it does not seem closely related to many of the species mentioned by Neviani.

Levensen† places *circumcincta* in his genus *Cheilopora*, in which some of the species have the ordinary and ovicelligerous zoecia similar, but in *circumcincta* and *præluvida* the ovicelligerous zoecia have different and larger oral apertures than the ordinary zoecia. One of my specimens of *præluvida* with an ovicell is from Tartary‡, and an ovicell has not been referred to by anyone else. It is globular, raised, perforated, and granular, about as wide as the zoecium, and is not directly closed by the operculum, for, as the ovicell is at a lower level than the operculum, connection with the ovicell is cut off when the operculum closes the oral aperture. The operculum of *L. sincera* has a nearly straight proximal edge with a thickened border parallel to the distal edge, and the operculum of *Cyclicopora prælonga*, Hincks, is very similar, so that it is unfortunate he gave the name *prælonga* to two species which may have to come into the same genus.

At one time the dimorphism, as seen in *circumcincta*, would have been thought sufficient reason for separating it gene-

* Ann. de Paléontologie, vols. ii.-iv. p. 77.

† Morph. & Syst. Stud. p. 353.

‡ The Tartary specimen has avicularia, as figured by Hincks, who, however, says no avicularia; so perhaps he did not recognise that they were avicularia, and in my specimens "from Singapore or the Philippines" there are none.

rically from forms in which it does not occur; but this cannot now be maintained. In Adeonellidæ this difference was made a generic character, but we now see that it only occurs in about half* the species. In *Lepralia* dimorphism is known in *depressa*, B.; *bistata*, Waters; *cineta*, Hincks; *cleidostoma*, Sm.; *circumcineta*, Nev. In *Hippochoa* it is sometimes found, as also in many Catenicellidæ; also in *Caleschara* and *Monoporella waipukerensis*, Waters, in *Cribrilina clithridiata*, Waters, and in *Schizoporella subimmersa*, MacG., &c.

In describing *Lepralia grimaldi*, Jullien says that the dimorphism of the zoecia in this species is enough to shake our confidence in the characteristic value of the oral aperture, but the reason for this is not clear, for the opercula of the ordinary zoecia will have the shape of the species both in colonies with or without ovicelligerous zoecia, and it is therefore a character of the greatest use—besides, in some cases the relationship may also be shown by the ovicelligerous zoecia.

I am not sure that *Hipporina* will stand as containing the present somewhat heterogeneous collection, nor do I feel at all satisfied with the family Hippopodinidæ, Lev., for *circumcineta* has not a thin-walled zoecium, the nature and shape of the ovicell is very different in *circumcineta* and *præluvida*, and then the slight difference in the distal wall in *Cheilopora* and *Hippopodina* is a trifling character, the difference in the rosette-plates may or may not be of importance. Under the circumstances I, provisionally, at least, adhere to *Lepralia* of Hincks, and to me it seems that the wisest and simplest thing would have been to have done so generally, and to have gradually removed species to other or new genera when there was sufficient reason for so doing; for as time has gone on it has become clear that many things were incorrectly grouped together under *Lepralia*.

Loc. Naples, 45 fath.; Capri, 30 fath.; Oran, 54 fath. (specimens given by Canu); Bay of Biscay, 240 metres (*J. & C.*).

Fossil. Spilinga, Calabria, post-Pliocene (*N.*); Monteleone, Calabria, Pliocene (*N.*); var., Carrubare, Calabria, Upper Pliocene (*N.*).

* "A Structure in *Adeonella*," Ann. & Mag. Nat. Hist. ser. 8, vol. ix. p. 497 (1912).

Lepralia oranensis, sp. n. (Pl. XII. figs. 11-13.)

The zoarium grows as a hollow cylinder (2-3 mm. diam.), or irregularly, in places forming more than one layer.

The oral aperture is exceedingly long with a marked contraction about the middle, the lower edge being nearly straight or slightly curved upwards, and the distal half of the operculum is very thick, almost semiglobular. On each side of the zoecium there is a long narrow avicularium, directed distally and extending beyond the line of the aperture. Although there are several specimens, no ovicells have been found. The surface of the zoecium is irregular, but cannot be called granular, and in the Oran specimens pores are seldom visible, whereas in the Liberia specimens they are more easily followed, there being three or four on the front and some by the avicularium.

There are two distal rosette-plates near the basal wall.

When only some of the tubular specimens had been seen there was thought to be some similarity to *Fedora excelsa*, Jull., but this idea was abandoned on finding more material. There is often a groove-like mark on the dorsal surface.

In a box in Jullien's collection from Petit Tahou, Liberia, there were a considerable number of specimens, together with *Cupularia canariensis* and an erect *Porella*, and specimens therefrom of *L. oranensis* were given to me in the Musée d'Histoire Naturelle, Paris.

Loc. Oran, "zone coralligene," 54 fathoms; Petit Tahou, Liberia.

Lagenipora ignota, Norman. (Pl. XII. figs. 15-17.)

Lagenipora ignota, Norman, "Polyzoa of Madeira," Journ. Linn. Soc., Zool. vol. xxx. p. 309, pl. xlii. figs. 10-13 (1909); Osburn, "Bry. of the Tortugas Islands," Pub. Carnegie Inst. of Washington, No. 182, p. 214 (1914).

The zoecia are small, and there are very narrow vicarious avicularia placed upon a kind of mound. No zoecia have been found with two peristomial avicularia, whereas the central peristomial avicularium is well-marked, having a chamber much the same shape as that figured by Savigny for his *Cellepora lancreti*, in which the ovicells are different.

The ovicells have a row of pores within the ridge, as is usual in *Lagenipora*, whereas *L. socialis*, Hincks, to which I have frequently referred*, has a pore at each corner, and as

* Journ. Linn. Soc., Zool. vol. xxx. p. 174 (1907); Proc. Zool. Soc. 1913, p. 511; Proc. Zool. Soc. 1914, p. 856.

this has not been figured a somewhat diagrammatic figure is given (fig. 14). In various species besides the usual row of pores there may be one or two near the centre of the area, and in a specimen from Glenelg, South Australia, the whole of the ovicell area has numerous pores. This last is very closely allied to my *L. caminata*, in which a few pores may be seen between the rows. In *L. costazii*, Aud., besides the usual row of pores at the distal edge of the area, there is frequently another row at the proximal edge, as is also the case in *L. lacinosa*, Calvet, which may be *costazii*, Aud.

The two straight sclerites of the mandible (fig. 16) are quite similar to those of *L. lucida*, and I only know them in these two species and *L. caminata*. Something of the kind occurs in *Thalamoporella rozieri*, Aud.

The oblique peristomial avicularium, figured by MacGillivray in his *Lagenipora nitens*, occurs also in the 'Challenger' *L. bilabiata*, B.; in what has been called *C. granum*; in the *L. lucida*, H.; in *L. diadema*, MacG.

L. ignota, may be only an erect form of *L. lucida*, and there are many cases of *Cellepora* in which the young and the adult forms have received different names. Both have the diagonal peristomial avicularium and the long narrow avicularium.

Loc. Madeira, 70 fath. (N.); Tortugas, 12 fath. (O.); Oran, 54 fath. From material given by Mons. Canu.

EXPLANATION OF PLATE XII.

- Fig. 1. *Pedicellina hirsuta*, Jullien, $\times 85$. a, spines, $\times 250$. From Naples.
- Fig. 2. *Lepralia bifurcata*, sp. n., $\times 25$. a, natural size. From Capri.
- Fig. 3. Ditto. $\times 25$. Showing the bifurcation and large round opening.
- Fig. 4. Ditto. $\times 50$. Showing an ovicell and two spatulate avicularia.
- Fig. 5. *Pedicellina hirsuta*, Jullien. $\times 12$.
- Fig. 6. *Lepralia circumcincta*, Neviani. $\times 12$. From Oran.
- Fig. 7. Ditto. $\times 85$. Operculum.
- Fig. 8. Ditto. $\times 85$. Operculum of ovicelligerous zoecia.
- Fig. 9. Ditto. Lateral wall, showing rosette-plates.
- Fig. 10. Ditto. Distal wall,
- Fig. 11. *Lepralia oranensis*, sp. n. $\times 25$. From Oran.
- Fig. 12. Ditto. $\times 85$. Operculum.
- Fig. 13. Ditto. $\times 85$. Mandible.
- Fig. 14. *Lagenipora socialis*, Hincks. Showing ovicell, somewhat diagrammatic.
- Fig. 15. *Lagenipora ignota*, Norman. $\times 50$. From Oran.
- Fig. 16. Ditto. $\times 85$. Mandible.
- Fig. 17. Ditto. $\times 85$. Operculum.